Claims

Method for the production of a material, whereby an aluminum-based alloy having a content of 5.5 to 13.0 mass-% silicon and a content of magnesium according to the formula

 $Mg [mass-%] = 1.73 \times Si [mass-%] + m$

where m = 1.5 to 6.0 mass-% magnesium

as well as having a copper content between 1.0 and 4.0 mass% is produced, the base alloy is subsequently heat-formed at
least once, as well as subsequently subjected to a heat
treatment consisting of solution heat treatment, quenching,
and artificial aging.

- Method according to claim 1, characterized in that the base alloy is produced by means of spray compacting.
- 3. Method according to claim 1, characterized in that the base alloy is produced by means of the method of continuous casting.
- 4. Method according to claim 1, characterized in that the base alloy is produced by means of the method of chill casting.

- 5. Method according to claim 3 or 4, characterized in that the base alloy contains 0.5-1.5 wt.-% magnesium phosphate for the purpose of increasing the grain fineness of the primary magnesium silicide that forms.
- 6. Method according to one of the preceding claims, characterized in that the base alloy is hot-formed by means of extrusion, hot rolling, or forging.
- 7. Method according to claim 3, characterized in that the hot forming is carried out with a degree of deformation greater than five times.
- 8. Method according to one of the preceding claims, characterized in that 1.5 to 3.0 mass-% copper are alloyed in.
- 9. Method according to one of the preceding claims, characterized in that the aluminum used does not contain more than 1 mass-% foreign elements.
- 10. Method according to claim 1, characterized in that the material is heated through at 500°C for 2 h, quenched in water, and subsequently annealed at 210°C for 10 h.

- 11. Material on the basis of an aluminum alloy, which can be obtained by means of a method according to one of claims 1 to 10.
- 12. Use of the material according to claim 11 for the production of components.
- 13. Component according to claim 12, namely pistons for internal combustion engines.